

## **APPENDIX B6 PRESCRIBED BURNING OPERATIONAL PLAN**

### **B6.1 INTRODUCTION**

The fire management section is responsible for fire detection, fire suppression, prescribed burning, and trail maintenance. This plan focuses on prescribed burning, although the implementation and accomplishment of this plan depends on the implementation of the trail maintenance plan. Trails provide access for burning operations and serve as boundaries between burn units

### **B6.2 GOALS AND OBJECTIVES**

The goals and objectives of the prescribed burning operational plan, as discussed in Chapter 9 Management Goals and Objectives, are as follows:

**GOAL 1. MANAGE NATURAL RESOURCES, TO THE EXTENT FEASIBLE, WITHIN, THE CONTEXTS OF WATERSHEDS, ECOLOGICAL GROUPS, AND LAND-USE / -CONDITION MATRICES.**

Objective a. Coordinate the use of watershed boundaries for management actions, such as timber harvest and the application of prescribed burns with the use of military compartment designations to reduce conflicts, maintain a safe training environment, and enhance ecosystem-based natural resource management approaches.

**GOAL 2. RESTORE AND MAINTAIN A VARIETY OF ECOSYSTEMS, WITH AN EMPHASIS ON THE LONGLEAF PINE (*PINUS PALUSTRIS*) ECOSYSTEM, TO CONSERVE NATIVE BIOLOGICAL DIVERSITY AND THE ECOLOGICAL PROCESSES THAT SUSTAIN IT.**

Objective a. Restore, by reintroduction and / or by the use of prescribed fire those pyrophytic grasses and other native plants characteristic of the understory of the longleaf pine ecosystem.

Objective b. Use fire to restore and maintain the longleaf pine ecosystem, as well as those ecotonal communities that depend in part on fire to maintain their biological diversity.

**GOAL 3. MANAGE HARDWOODS USING AN ECOSYSTEM APPROACH: CONSERVE HARDWOODS WHERE THEY ARE ECOLOGICALLY APPROPRIATE AND CONTRIBUTE TO OVERALL BIOLOGICAL DIVERSITY; CONVERSELY, CONTROL HARDWOODS WHERE THEY ARE DETRIMENTAL TO MANAGEMENT GOALS AND OBJECTIVES, INCLUDING RESTORATION OF THE LONGLEAF PINE ECOSYSTEM.**

Objective a. Conserve ecotones between pines and hardwood communities in upland slope, and bottomland sites by using fire and other silvicultural activities as the primary management tools.

Objective b. Do not purposely burn bottomland hardwood communities. Use an adaptive management approach to introduce fire to other hardwood communities that depend on fire for their maintenance.

Objective c. Monitor the impacts of fire and other silvicultural activities on hardwood communities.

**GOAL 4. MANAGE AQUATIC AND WETLAND ECOSYSTEMS TO RESTORE AND MAINTAIN THEIR ECOLOGICAL INTEGRITY.**

Objective a. Use silviculture and fire to restore and / or maintain natural ecotones between wetlands and uplands.

**GOAL 5. USE FOREST MANAGEMENT AS PART OF AN ADAPTIVE MANAGEMENT APPROACH THAT FOCUSES ON THE ECOLOGICAL INTEGRITY OF THE LANDSCAPE AS ITS PRIMARY END STATE.**

Objective a. Use silviculture, including the use of fire, such that their primary emphases are to maintain a realistic training environment and to support the habitat needs of listed and other species of conservation concern.

Objective b. Use prescribed fire at the frequencies, timing, and intensities appropriate to restore and maintain longleaf pine communities, to enhance overall plant community diversity, and to support habitat management needs of the red-cockaded woodpecker.

Objective c. Prioritize prescribed burns on an annual basis such that, to the extent achievable within a military training environment, the priority best reflects the goals of longleaf pine ecosystem restoration and listed species recovery or maintenance.

Objective d. Monitor the effects of prescribed burning on hardwood control, longleaf pine regeneration, rare plants, and native herbaceous species recovery.

Objective e. Initiate an educational program to increase the public's awareness of the benefits of prescribed fire and sound silvicultural practices.

Apply prescribed fire to top kill small hardwoods that consistently encroach into pine dominant stands, to reduce fuel loads in pine stands which reduce fire intensity providing a safer environment for military training, to prepare sites for tree planting and timber marking, to enhance wildlife habitat by improving the quality and quantity of food, and to promote a longleaf pine ecosystem with biological diversity (Landers, Van Lear, and Boyer. 1995).

Apply prescribed fire to maintain open understories and improve accessibility in order to optimize troop training and recreational opportunities.

Plan, execute and document all burns to the standards described in **Attachments 2 and 3.**

### **B6.3 TASK**

Task size depends on the location (training or cantonment area) and size of a burn area, number of assets to protect, and the number and status of RCW clusters. The number of personnel required to execute a prescribed burn may vary from two to eight. The following information is used as a general guideline when referring to the man-power required to complete the execution phase of the prescribed burning program:

- ◆ total pine or pine-hardwood stands: 94,000 acres
- ◆ approximate burn area size (training areas): 200-600 acres (average≈275 acres)
- ◆ total projected burning units (**Attachment B6.1**): 342
- ◆ total projected units treated annually on a 2-3 year rotation: 114-171

### **B6.4 ESTIMATED NUMBER OF BURN DAYS PER YEAR**

Historical records indicate that burning is conducted on 75 to 90 days per year. This does not reflect the number of potentially suitable burning days per year because it does not include week-ends and holidays.

### **B6.5 TRAINING AND STAFFING**

All burning activities are completed by Land Management Branch (LMB) and Conservation Branch (CB) personnel. All prescribed burners and crew leaders (burn bosses) receive formal training in prescribed burning. The following coursework is required:

WILDLAND FIREFIGHTERS COURSE S-130 / S-190 – (prescribed burners and crew leaders)

INTER-AGENCY PRESCRIBED BURNING SHORT COURSE WHICH INCLUDES THE  
S-390 FIRE BEHAVIOR INDEPENDENT STUDY COURSE - (prescribed  
burners and crew leaders)

GEORGIA AND ALABAMA FORESTRY COMMISSION PRESCRIBED BURN

## MANAGER CERTIFICATION PROGRAM - (crew leaders only)

The current work force consists of personnel from the Fire Management Section, Land Management Branch and the RCW Section, Conservation Branch. Personnel involved in prescribed burning from the Fire Management Section include 1 supervisory forester, 6 forest technicians, and 1 equipment operator. Personnel from the RCW Section include 1 RCW biologist and 6 RCW technicians. RCW personnel only burn the RCW clusters while fire management personnel burn the surrounding foraging habitat. The fire management staff are the only personnel dedicated primarily to prescribed burning.

### **B6.6 BURN ROTATION**

Prescribed fire is used for the benefit of all species that depend on fire-dependent communities. The goal is to treat all RCW Habitat Management Units (HMU's) with prescribed fire at least every 3 years in accordance with the 1996 Management Guidelines for the Red-cockaded Woodpecker on Army Installations (U. S. Department of the Army, 1996). After the hardwood midstory is under control in any particular burn unit this interval may be increased to 4 or 5 years after consulting with the U. S. Fish and Wildlife Service. The interval will depend on the forest type, forest litter, ground cover vegetation, the extent of hardwood encroachment, and the ability to control hardwood encroachment. For example, once hardwood encroachment has been reduced from the midstory to ground cover consisting of grasses and herbaceous vegetation, maintenance burning may be utilized on a longer interval of 3 to 4 years in mixed stands of loblolly and shortleaf pine. On the other hand, if the forest type is predominantly longleaf pine or a mixture of longleaf and loblolly pine the interval may be decreased to 2 years because these species produce more litter or pine straw (fine fuel or one-hour time lag fuel) to carry the fire making them more compatible with a shorter burn rotation.

### **B6.7 BURN SEASON AND LOCATION AND PRIORITIZATION OF BURN UNITS**

Prescribed burning of the understory is conducted during the dormant and growing seasons. This season occurs from mid-December through August. Burning is coordinated with LMB and CB program managers. The location of burn units (Attachment B6.1) is identified and prioritized based on the following criteria, with the 1996 Army RCW Guidelines taking precedent over all others:

1. 1996 Army RCW Guidelines (and the priorities therein for RCW HMU's).
2. Fire-related management needs of other listed species.
3. Burn unit (forest stand) management objectives related to the restoration or maintenance of ecological integrity.
4. Timing of timber marking and soil conservation projects (these should be planned around the burn schedule).
5. Fire-related management needs of focal game species.

Prioritization and the identification of burn units is necessary due to scheduling conflicts with training, since some compartments are more inaccessible than others. Prioritization and timing of burns will also depend on long range forecasts. For example, if climatologists forecast a La Niña weather pattern it should be the goal to complete all scheduled burning early in the burning season prior to the development of drought conditions and a high drought index when burning could have detrimental effects on management objectives.

Within HMU's the burning priority is given to active clusters. All clusters and recruitment stands will be kept clear of a dense midstory with the optimal goal of achieving and maintaining open, park-like stands. Other suitable habitat within HMU's, such as, foraging and replacement stands are maintained by prescribed burning sufficient enough to control hardwood growth, ground fuel buildup, and eliminate dense midstory.

Prescribed burning is normally the most effective means of midstory control and is recommended as the best means of maintaining a healthy ecosystem. The goal is to conduct prescribed burning at least every three years in longleaf, loblolly, slash pine, and shortleaf pine ecosystems. Burning is conducted in accordance with applicable federal, state, and local air quality laws and regulations. Where midstory control is required burning is conducted in the

growing season since the full benefits of fire are not achieved from non-growing season burns. Winter burns are used to reduce high fuel loads prior to implementing growing season burns. The required precautions must be taken to protect cavity trees from fire damage during burning operations (U. S. Department of the Army, 1996). Dormant season burning is used in young plantations to reduce fuel loads (hazard reduction burning) and in stands requiring the protection of natural or artificial reproduction. Dormant season burning can also be used periodically in stands where hardwoods are not a problem and the ground cover consists of grasses and herbaceous vegetation.

Site preparation burns are used during the growing season to take advantage of high ambient temperatures required to burn logging slash and drum-chopped vegetation in regeneration cuts. Site preparation burns are also used in the late growing season on areas treated with herbicides to prepare the sites for tree planting. The purpose of all site preparation burning is to prepare areas for the planting of pine seedlings.

In addition, if fire weather and training area access can be synchronized some of the "A", "D", and "K" training areas, where turkey hunting is prevalent, may be burned in the dormant season after deer season and before turkey season. This will avoid the conflict of burning these popular hunting areas during the turkey hunting season. It will also reduce adverse impacts on turkey nesting and allow hens time to re-nest. Dormant season burning is only possible in these areas if hardwood encroachment is no longer a problem and the maintenance stage has been achieved. Dormant season burning is also used on Relict trillium sites from January to mid-February prior to emergence of the plant.

Growing season burning for hardwood control and fire-dependent species versus dormant season burning for game species will require cooperation between the RCW biologist, T&E biologist and game biologist. The key point to consider in the coordination process is prioritization because it is logistically impossible to treat all areas with fire during one season, whether it be the dormant or growing season. There must be a combination of both dormant and growing season burns to accomplish natural resource management goals.

Prescribed fires promote grasses, legumes, and various annuals that provide insects for juvenile birds and seeds for adults. Although some nests will be lost to fire during growing season burns quail and turkey will re-nest depending on how late it is in nesting season. This will spread the hatching dates for both species. (Stivers, 1998).

## **B6.8 BURN AREA SIZE**

The LMB considers the effects of growing season fire on game species, such as deer, turkey, and quail, only after burning priorities have been met for RCW HMU's and other threatened and endangered species habitat. The size of a burn area has an effect on game species populations. The size of burn areas on Fort Benning ranges from 5 acres in the cantonment areas to 200-600 acres in training areas, with 275 acres being the average in training areas. The size of the burn areas depends on the location of man-made and natural firebreaks, such as roads, trails, creeks, and hardwood drains. The adaptive use of fire based on management objectives and prioritization will result in a more random method of burning, unlike the current method of a 3 year rigid burn rotation where the same compartments or areas are burned every 3 years. This method of burning will provide a mosaic of burned and unburned areas which will maximize "edge effect" promoting a large and varied wildlife population (Wade, Lunsford, 1988).

Actual burn area size is dictated by existing man-made and natural firebreaks. New firebreaks will not be plowed specifically to limit burn area size or to protect hardwood drainages and scrub oak communities. This would require the plowing of many miles of firebreaks. It would be logistically impossible to plow this many firebreaks while adhering to BMPs. In addition, the potential for erosion would be substantial. Another point to consider when contemplating the use of firebreaks is damage to the ecotone where threatened, and endangered species, such as relict trillium occur. Therefore, the benefits of reducing burn area size, or excluding a hardwood drain and / or scrub oak community, would be more than offset by the soil disturbance and damage to the ecotone, as well as, the costs incurred by plowing firebreaks and correcting the subsequent soil erosion. On the other hand, firebreaks may be used to protect threatened and endangered species habitat or unique rock outcrop communities.

The burn pattern that is created on the landscape will be dictated by the prioritization criteria in Section B6.7. In general it will take on a mosaic appearance with a diverse group of successional stages. Under ideal fire weather and smoke dispersion conditions adjacent burn units and compartments may be burned during the dormant season. In order to accomplish this, smoke management guidelines (Mobley, 1990, revised 1996) for the *Smoke Dispersion*

*Index (SDI)* must be very good (61-100) to excellent (>100). The prescribed weather parameters for wind direction, humidity, surface wind speed, mixing height, and transport wind speed must be met as well. In addition, adjacent burn units may be burned on consecutive days if there are only several compartments open for burning and the weather (primarily wind direction) dictates burning in these compartments; or if the compartment is located on the installation boundary and requires favorable prevailing winds such as occurs when a cold front or high pressure system is present that keeps the smoke on the installation and away from populated smoke sensitive areas located adjacent to the installation.

In addition, burning may occur in adjacent compartments when an RCW cluster, or, a stand with the same forest type exists on both sides of the compartment boundary. This will also be the case when there is no existing man-made or natural firebreak on the compartment boundary and the firebreak is located in the adjacent compartment.

## **B6.9 COORDINATION WITH NATURAL RESOURCE MANAGEMENT PERSONNEL**

Three months prior to the start of the burn season the Fire Management Section begins the coordination process for the upcoming year's prescribed burns. Coordination takes place with the following LMB and CB personnel: RCW biologist (cluster locations, hardwood control locations, RCW database, GPS cavity map, and cluster burn priority [ranking form]); T&E biologist (location of T&E species and timing of burns [season]); timber management forester (locations of marked timber and timber harvest operations); soil conservationist (location of watershed restoration projects); fish and wildlife supervisor (location and protection of wildlife openings, such as sawtooth oaks).

In addition to post burn evaluations by fire technicians, the RCW technicians will conduct monitoring in RCW clusters for hardwood encroachment. Timber management technicians will provide information on such things as a bumper longleaf pine seed crop and the timing of a seed bed preparation burn. This information will help prioritize the timing of prescribed burning with respect to winter, spring, and summer. For example, if you are expecting a bumper seed crop you would conduct a summer burn prior to seed fall in October. This removes the litter layer and exposes the mineral soil which facilitates germination of longleaf pine seeds.

In order to prioritize burning the following information will be necessary from the following program areas during the coordination process:

- 1. Red-cockaded Woodpecker** - Those burn units affected by 1996 Army guidelines in the order of HMU components specified in the guidelines, location of clusters on photos and photo copies, RCW listing, and GIS map showing cavity tree location and status, location of clusters mechanically treated for hardwood control. (**Note:** clusters within the same burn unit need to be scheduled for burning at the same time to eliminate plowing of firebreaks).
- 2. Threatened and Endangered Species** - Those burn units containing other T and E species that may have conflicting responses to burning that favors the RCW, such as relict trillium, woody goldenrod, and bald eagle, location of species on photo and photo copy, and specific months to burn these sites.
- 3. Timber Management** - The overall stand management (restoration / maintenance) objectives related to ecological integrity and the location of timber harvesting / marking areas.
- 4. Soil Conservation** - Location of watershed restoration projects and approximate month these areas will be stabilized (must plan and schedule these projects around burning schedule).
- 5. Fish and Game Management** - Specific game species needs, location of sawtooth oak and other wildlife plots where fire must be excluded, and specific month these areas will be secured by disking.

## **B6.10 POST-BURN EVALUATION AND MONITORING**

Fire technicians conduct an initial evaluation of burn results within 24 hours of the prescribed burn. The findings of this evaluation are documented on the Burn Form. This evaluation includes a determination of the amount / extent

of crown scorch, adverse smoke problems, spotting problems, action taken, fire behavior, mop up required, objectives met, and erosion potential.

The second evaluation is conducted depending on when burning actually occurs in any given year. The window for monitoring is May through October. This evaluation consists of the following information: hardwood topkill, sprouting vigor (height and number of sprouts), ground cover (herbaceous or woody), bark char severity, litter layer condition, delayed mortality of overstory pines, insect and disease damage, presence and quantity of natural or artificial reproduction, survival of natural or artificial reproduction, exposure of mineral soil, and erosion status. This information is recorded on the Prescribed Fire Post-burn Evaluation / Monitoring Form.

This information will dictate further management actions that may be required as a result of the burn. For example, pockets of trees showing cambium damage, insect or beetle attack, and mortality will be salvaged. This information will be given to the timber management section. Also, if the burn was conducted on a marginal day and the objective for hardwood control was not met the area may be rescheduled in 2 years rather than 3 years. If the cover type in the burn area is predominantly grasses, lespedezas, and perennial plants dormant season or maintenance burning should be considered in the future. In addition, erosion may be a problem if the burn removed the duff layer and exposed mineral soil on steep slopes or above ephemeral drains. These areas should be considered for establishing a temporary vegetative cover with fast growing seedlings (On-Site Erosion Control Manual, 1979).

#### **B6.11 GENERAL PROCEDURE AND POLICY**

The Fort Benning Prescribed Burning Operational Plan provides the day-to-day procedural guidance for the implementation of the Standard Operating Procedure (SOP) in **Attachment B6.2**. The SOP will be adhered to by all CB/LMB burning staff to ensure that quality burning is accomplished and that personnel conduct burning in a safe and efficient manner.

Fire is applied by ground crews with drip torches. The crew leader designates the burn area, firing technique, ignition / firing pattern, and the sequence of line firing.

Burn units are defined by existing roads, fire breaks, drains, creeks and other man-made and natural features. Construction of new firebreaks is required where there are no artificial or natural firebreaks between burn units. This situation is the exception which minimizes the potential for erosion. When firebreaks are required erosion control practices are used in accordance with Georgia's BMP's for forestry.

Back, flank, head, strip-head and / or spot fires are applied in a variety of sequences, according to burn objectives, topography, forest type, stand condition class, fuel loads (1 to 4 years) and fire weather conditions (Wade and Lunsford, 1988).

#### **B6.12 PLANNING AND DOCUMENTATION**

Photographic documentation is made of the effects of fire on the vertical arrangement of understory hardwoods. A 1:25,000 scale burn map is maintained annually to show burned areas, areas to be burned, and the spatial relationship between burn areas. Prior to the burning season a prioritized list of compartments is compiled based on the management objectives and criteria in B6.7. Prescribed burns that occur in RCW clusters will be entered in the RCW data base. Each prescribed burn is digitized on the GIS system. A detailed table and summary is prepared annually summarizing all prescribed burning for the fiscal year.

Refer to **Attachment B6.2** for documents and forms that will be completed and filed on each burn.

##### **B6.12.1 Burn Form**

All information related to the burn unit (physical characteristics, T&E species, wildlife areas, and burn location), personnel, weather parameters, assets to protect, location of firebreaks, Keetch-Byram Drought Index (KBDI) and evaluation of the burn appears on this form.

The Keetch-Byram Drought Index (KBDI) is used as an indicator of drought conditions and soil moisture the potential for 1000 hour time lag fuels to ignite and smolder causing smoke problems. The KBDI is utilized to avoid burning during drought conditions when delayed mortality and smoke may be a problem, especially during July and August. The KBDI is considered in any decision to suspend burning during severe drought. The daily KBDI can be obtained from the Georgia Forestry Commission. KBDI values are updated daily.

The Burn Form also shows the preferred weather parameters to follow prior to conducting a prescribed burn. It is essential to follow these parameters in order to meet management objectives. The weather parameters as they appear on the Burn Form are as follows:

#### **Preferred**

SFC Wind / Direction	<u>6-15 MPH/</u>
Air Temperature	<u>                    </u>
(40-70 Winter, 60-85 Spring, 75-95 Summer)	
Relative Humidity	<u>25-60%</u>
Fuel Moisture	<u>1 HR.= 7-15%</u>
Days Since Rain	<u>1 - 10 DAYS</u>
Transport Wind	<u>&gt; Than 9 MPH</u>
Mixing Height	<u>&gt; Than 1650 FT</u>

Smoke Dispersion Index ( SDI ) > 40                           Drought Index < 500                     

#### **B6.12.2 Telephone Contact List**

On the day of the scheduled burn the crew leader (burn boss) ensures that all of the appropriate individuals, units, and agencies are contacted prior to proceeding with the burn.

#### **B6.12.3 Georgia Forestry Commission Fire weather Forecast**

Before proceeding with the scheduled burn the fire weather forecast is obtained from the Georgia Forestry Commission (GFC). The fire weather forecast is reviewed for preferred weather parameters, drought index, smoke dispersion index, fog potential, and inversions.

#### **B6.12.4 Field Weather Observations**

*Air temperature, wind speed/direction and relative humidity:* The crew leader ensures that basic fire weather components are measured and recorded during the peak fire weather for the day (between 1200-1400 hours). Measurements are taken with a belt weather kit and recorded on the fire weather information form.

#### **B6.12.5 Photo Copy or Orthophoto of Burn Area**

The lead fire technician delineates the burn area, assets, threatened and endangered species, wildlife areas, firebreaks, and firing lines / ignition pattern on a photo copy / or orthophoto of the area to be burned.

#### **B6.12.6 RCW Tree Listing**

This form is a listing of all RCW trees. The listing will include the cluster number, tree number, status, and location. The RCW biologist or lead RCW technician will provide this information.

### **B6.12.7 RCW GPS Map**

This map shows the location of each tree within the RCW cluster, facilitating the location and protection of each tree during the burning process.

### **B6.12.8 Smoke Screening Form**

This form, used in conjunction with the smoke screening map, identifies the smoke impact distance and smoke sensitive areas within 5 to 10 chains, downwind, and down drainage of the burn area. The smoke impact distance is based on the Smoke Dispersion Index (SDI), size of burn, and method of firing.

### **B6.12.9 Smoke Impact Map**

This map shows smoke sensitive areas, smoke impact areas, and smoke impact distances for different smoke dispersion indices and wind directions.

### **B6.12.10 Prescribed Fire Post-burn Evaluation / Monitoring Form**

This form is used to gather the data necessary to complete the post-burn second evaluation.

## **B6.14 DEFINITIONS**

There are many terms associated with fire management and prescribed burning. The following definitions were taken from the manuals / books of "A Guide for Prescribed Fire in Southern Forests", "Georgia's Best Management Practices for Forestry", and "The Dictionary of Forestry":

**Backing fire.**—A fire spreading or set to spread into (against) the wind, or downhill.

**Backpack pump or bladder bag.**—A 5 gallon container with shoulder straps and slide pump used in remote areas to mop up or suppress fires.

**Bark char.**—The height of the blackened bark on the tree bole caused by the heat from a fire.

**Belt weather kit.**—Belt mounted canvas case with fitted pockets for anemometer, compass, sling psychrometer, slide rule, water bottle, pencils, and book of weather report forms.

**Best Management Practices (BMPs).**—Methods, measures, or practices to prevent or reduce water pollution, including but not limited to, structural and non-structural controls, operation and maintenance procedures, and other requirements, scheduling and distribution of activities. Usually BMPs are applied as a system of practices rather than a single practice.

**Biological diversity (biodiversity).**—The variety and abundance of life forms, processes, functions, and structures of plants, animals, and other living organisms, including the relative complexity of species, communities, gene pools, and ecosystems at spatial scales that range from local through regional to global. Also, an index of richness in a community, ecosystem, or landscape and the relative abundance of these species.

**Blackline.**—Preburning of fuels, either adjacent to a control line before igniting the main prescribed fire, or along a roadway as a deterrent to human-caused fires. Blackline denotes a condition in which there is no unburned fine fuel.

**Burn boss.**—Person responsible for managing a prescribed fire from ignition through mop-up.

**Convection column.**—The rising column of gases, smoke, and debris produced by a fire. The column has a strong vertical component indicating that buoyant forces override the ambient surface wind. A convection column forms a specific part of the smoke plume.

**Crown scorch.**—Browning of needles or leaves in the crown of a tree or shrub caused by heat from a fire.



**Dormant season.**—A condition in the life of an organism or its parts (sometimes termed the resting stage) when a tissue predisposed to proliferate does not do so and visible growth and development are temporarily suspended. This condition occurs during the winter months (winter dormancy).

**Ecosystem.**—A spatially explicit, relatively homogeneous unit of the earth that includes all interacting organisms and components of the abiotic environment within its boundaries.

**Drip torch.**—Hand-held apparatus used to ignite fires by dripping flaming liquid fuel (burning fuel), at an adjustable rate, on the materials to be burned. The fuel is generally a mixture of 65% diesel and 35% gasoline.

**Duff layer.**—The layer of decomposing organic materials lying below the litter layer and immediately above the mineral soil. It is comprised of the fermentation and humus layers of the forest floor.

**Ecotone.**—The transition zone between two adjoining communities.

**Edge effect.**—The modified environmental conditions or habitat along the margins (edges) of forest stands or patches. The conditions / habitat required many wildlife species.

**Ephemeral areas.**—Commonly referred to as drains, draws, or dry washes that typically have no well-defined channel and flow only during and for short periods following precipitation. Leaf, straw, and other forest litter is typically present or sporadically displaced in the ephemeral area. Aquatic insects are not present in these areas.

**Fine fuels (flash fuels or one-hour time lag fuels).**—Fast-drying, dead fuels which have a time lag constant of 1 hour or less. These fuels ignite readily and are consumed rapidly when dry. Included are grass, draped pine needles, and small twigs less than ¼ inch in diameter.

**Fire behavior.**—A general term that refers to the combined effect of fuel, weather, and topography on a fire.

**Firebreak.**—Any natural or constructed discontinuity in a fuel bed used to segregate, stop, or control the spread of fire or to provide a control line from which to suppress a fire.

**Fire flap.**—A fire swatter type hand tool used for batting out or smothering grassfires.

**Fire rake.**—A long-handled combination rake and cutting tool, the blade of which is usually constructed of a single row of 4 sharpened teeth.

**Firing technique.**—The type(s) of fire resulting from one or more ignition(s), e.g., backing fire, flanking fire, heading fire.

**Flanking fire.**—A fire front spreading, or set to spread at roughly right angles to the prevailing wind.

**Forest litter.**—The top layer of the forest floor directly above the duff layer, composed mainly of recently fallen leaves and pine needles, but also includes dead twigs and bark fragments.

**Fuel load.**—The oven dry weight of all existing fuels (living and dead) in a given area, usually expressed in tons/acre.

**Growing season.**—A condition in the life of an organism or its parts when a tissue predisposed to proliferate shows visible growth and development. This condition occurs during the spring and summer months. Forest stands with hardwood / midstory control problems should be treated with prescribed fire during growing season in order to achieve hardwood topkill.

**Hazard reduction.**—Treatment of living and dead forest fuels to reduce the likelihood of a fire starting, and to lessen its damage potential and resistance to control.

**Heading fire.** A fire front spreading or set to spread with the wind or upslope.

**Herbaceous.**—Grasses and other plants that contain little woody tissue.

**Ignition pattern.**—The manner in which a prescribed fire is ignited. The distance between ignition lines or points and the sequence of igniting them, as determined by fuel, topography, weather, ignition system, firing technique, and other factors influencing fire behavior and the objectives of the burn.

**Inversion.**—A layer in the atmosphere through which the temperature increases with altitude. The lowest altitude at which the departure is found is called the base of the inversion.

**Keetch-Byram Drought Index (KBDI).**—A numerical rating of the net effect of evapotranspiration and precipitation in producing cumulative moisture depletion in deep duff or upper soil layers. The KBDI ranges from 0-800. The 600-800 range indicates a severe drought. Generally the use of prescribed fire is suspended when the Index reaches 500.

**Ladder fuels.**—Fuels that provide vertical continuity between the ground and tree crowns, thus creating a pathway for a surface fire to move into the overstory tree crowns.

**Mixing height.**—The height to which relatively vigorous mixing of the atmosphere occurs.

**Mop-up.**—Extinguishing or removing burning material, especially near control lines after an area has burned to make it safe, or to reduce residual smoke.

**Nomex.**—Flame resistant clothing offering protection against flames, falling embers, coals, and radiant heat.

**Particulate Matter.**—Any liquid or solid particles temporarily suspended in the atmosphere

**One thousand-hour time lag fuels.**—Large dead combustible material consisting of roundwood greater than 3 inches in diameter and the layer of the forest floor that extends 4 inches below the surface (e.g. are branches, snags and stumps).

**Plume.**—The gases, smoke, and debris that rise slowly from a fire while being carried along the ground because the buoyant forces are exceeded by those of the ambient surface wind. A convection column forms a specific part of the plume.

**Plume trajectory.**—The direction the transport winds carry the smoke plume.

**Prescribed burn.**—The controlled application of fire to wildland fuels in either a natural or modified state, under specified environmental conditions which allow the fire to be confined to a predetermined area and at the same time produce the intensity required to attain planned management objectives.

**Site preparation burning.**—A fire set to expose adequate mineral soil and control competing vegetation until seedlings of the desired species become established.

**Smoke Dispersion Index (SDI).**—A numerical index related to the ability of the atmosphere to disperse smoke. The SDI ranges from 1 to 6. With a forecasted SDI of 6 a prescribed burner can expect excellent smoke dispersion during the burn.

**Smoke impact distance.**—The distance the smoke will travel downwind or down drainage based on the fuel type, firing technique, size of burn area, and SDI.

**Smoke management.**—Application of knowledge of fire behavior and meteorological processes to minimize air quality degradation during prescribed burning.

**Smoke screening.**—The process of determining the distance and direction of a possible smoke impact, and identifying smoke sensitive areas (SSAs) within that impact, and making necessary changes to eliminate or minimize the impact.

**Smoke sensitive area.**—An area in which smoke from outside sources is intolerable.

**Spot firing.**—Lighting a series of small spot fires which burn in all directions as they come together. Spacing of spot fires depends on weather and fuel conditions. They may vary from 20 to 120 feet.

**Strip-heading fire.**—A series of lines of fire upwind (or downslope) of a firebreak or backing fire that will burn with the wind toward the firebreak or backing fire.

**Surface wind.**—A wind measured at a surface observing station, customarily at some distance (usually 20 feet) above the ground to minimize the distorting effects of local obstacles and terrain.

**Time lag.**—The drying time, under specified conditions, required for a dead fuel to lose about 63% of the difference between its initial moisture content and its equilibrium moisture content.

**Top kill.**—The gradual or sudden dieback of the uppermost portion of a plant, especially hardwood trees or other woody plants.

**Transport wind speed.**—A measure of the average rate of the horizontal movement of air throughout the mixing layer.

## **B6.15 REFERENCES**

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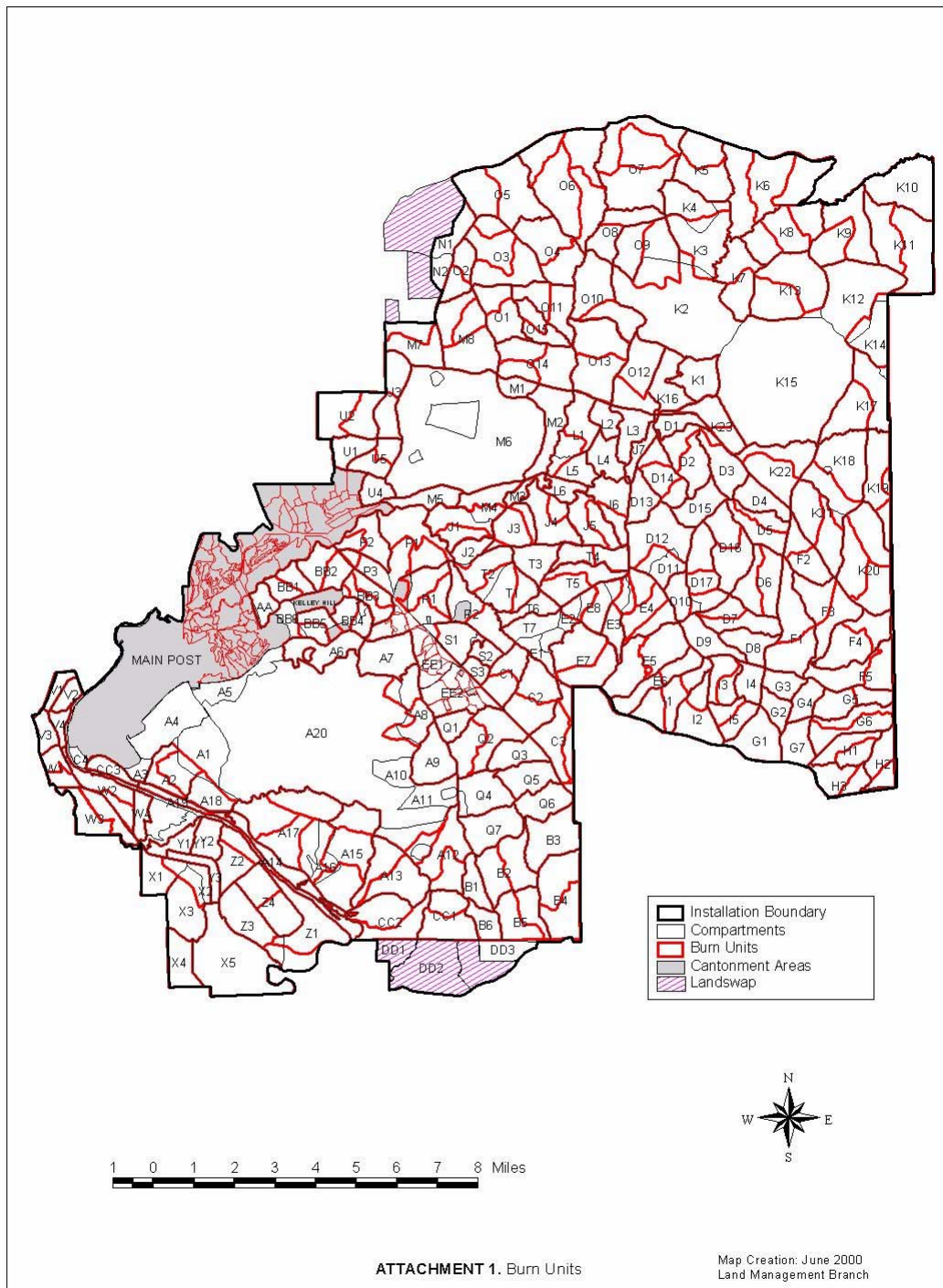
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# ATTACHMENT B6.1: FORT BENNING PRESCRIBED BURNING UNITS



## **ATTACHMENT B6.2: FORT BENNING PRESCRIBED BURNING STANDARD OPERATING PROCEDURE**

**1. PURPOSE:** To establish procedural guidance for the application of prescribed fire during the dormant season and growing season.

**2. IMPORTANCE:** This SOP will be adhered to by all CB/LMB burning staff, in order to ensure crew safety and high standards of quality. The SOP will be revised by the supervisory forester of the Fire Management Section as needed to reflect for policy, procedural, regulatory, or technological changes.. Revisions in the SOP will be coordinated with personnel in the LMB and CB.

### **3. GENERAL INSTRUCTION**

#### **Prior to the Burn Season:**

a. Twelve months prior to the start of the burn season a list of compartments not being burned in the current fiscal year is given to the RCW coordinator / biologist for prioritization based on the 1996 Army RCW Guidelines and the requirements therein for RCW HMU's. This list must be prioritized and returned to the lead fire technician by April 1 so that firebreak and trail maintenance work between burn units and compartments can begin (approximately 175-200 miles). This work is primarily grader work and generally requires 6 to 7 months to complete.

b. Four months prior to the start of the burn season the lead fire technician prepares a burn folder for each burn unit. These folders are then coordinated with other program specialists within the LMB and CB for their input or concerns with respect to other threatened and endangered species, stand management objectives, timber marking, timber harvesting, soil restoration projects, and game management areas. This process identifies areas that require exclusion from fire. It also serves as a reminder for CB personnel to protect game areas by disk around them. Areas requiring fire exclusion must be protected before the start of burn season.

c. One month prior to the burn season the lead fire technician begins scheduling compartments for burning from the prioritized list. Scheduling is coordinated with Range Control Division and compartments are entered into the RFMSS scheduling system. The lead technician also updates the prescribed burning notice weekly and faxes it to the Bayonet for publication. The Bayonet deadline is 1200 hours on the preceding Friday for publication on the following Friday. The burning notice is a one week projection of all compartments where burning may occur. The notice informs

d. Identify and document on the burn plan and photo copy assets within the burn area that must not burn, such as utility poles and boxes, latrines, bleachers, buildings, railroad trestles, etc. The burn boss must coordinate the location of these assets with burn crews to ensure they are protected prior to conducting the burn. Protect these assets by raking away the pine straw, leaves, and grass for a distance of 3 feet. Ignite the raked up fuel allowing it to burn away from the assets. Extinguish flare ups or hot spots with a backpack pump. Ensure the fire has burned a sufficient distance away from the assets prior to leaving the area. Look for ladder fuels (vines) near buildings and avoid igniting them because they have a tendency to emit burning or smoldering embers which may fall on top of the building causing a fire. If ladder fuels catch fire suppress them with a backpack pump. Use the backpack pump in combination with the fire rake and/or flap.

e. Take beginning photographs in those areas that will be documented for the effects of fire on hardwood encroachment. (**procedure in Box 1**)

**Box 1. Documenting the Effects of Fire on the Stature of Understory Hardwoods in RCW HMU's**

A. The effects of prescribed fire will be documented by taking photographs of the burn area prior to treatment and after treatment. Photographic documentation will be accomplished according to the following procedures:

- 1) Include a note in the first picture of each roll, stating the location and colony number.
- 2) RCW trees serve as camera points.
  - a. Stand at each chosen RCW tree and take four shots, one toward each cardinal point of the compass (N, E, S, W).
  - b. Cardinal point is *exactly* in the center of the frame.
- 3) To keep the same vertical aspect in shots taken during subsequent seasons, take the original shot to the field and refer to it.
- 4) Photograph before the burn and after the burn during the next growing season. Once a file of camera points is established, shots should be taken before the next burn rotation and after completion of the burn, during the next growing season, and so on.
- 5) Keep field notes and transfer to disk ASAP.

PRE-BURN SHOTS OF C1-4 TAKEN ON 9/16:

Frame	Cluster#	Cavity Tree#	Azimuth	Date
1	C1-4	122	N	9/16
2	C1-4	122	E	9/16
3	C1-4	122	S	9/16
4	C1-4	122	W	9/16
5	C1-4	578	N	9/16
6	C1-4	578	E	9/16
7	C1-4	578	S	9/16
8	C1-4	578	W	9/16

POST-BURN SHOTS OF C1-4 TAKEN ON 6/15 (C1-4 WAS BURNED ON 4/13):

Frame	Cluster#	Cavity Tree#	Azimuth	Date
9	C1-4	122	N	6/15
10	C1-4	122	E	6/15
11	C1-4	122	S	6/15
12	C1-4	122	W	6/15
13	C1-4	578	N	6/15
14	C1-4	578	E	6/15
15	C1-4	578	S	6/15
16	C1-4	578	W	6/15

B. Photographic documentation will be utilized in conjunction with monitoring and evaluation data. This will be most useful in showing the effects of growing season burns versus dormant season burns in controlling the understory. In addition, photographs/slides can be useful for educational purposes, such as, briefings and exhibits.

***On the burn day, before leaving office:***

f. The designated burn boss will ensure that the burn plan, smoke management plan, and all other burn forms are completed and the SOP is followed. The burn boss will bring the burn plan folder, aerial photographs, and a 1:50,000 map. If burning in a RCW cluster the burn boss will ensure that RCW tree listing and GPS cluster map are on hand. The burn boss will appoint crew members to ensure that trucks are properly prepared and equipped according to the list in **Box 2**. The burn boss and crew members will be familiar with the equipment list.

**Box 2. Prescribed Burning Equipment Checklist**

<u>Item</u>	<u>Quantity</u>
First aid kit	1
Fire extinguisher	1
Belt weather kit	1
Drip torches	2
Five-gallon cans, <u>filled with burning fuel</u>	3
Back pack pump or bladder bag	1
Five-gallon containers	2
Fire flaps	1
Fire rakes	2
Shovel	1
Smoke caution signs	4
Lights for smoke signs, if necessary	4
Batteries for lights	8
Crew members will travel two to a vehicle. Each burner will ensure that they have the following equipment:	
Ignition source	1
Fire rake	1
Drip torch ( <u>filled with fuel</u> )	1
Leather safety boots	1
Nomex clothing	1
Leather gloves	1
Water Cooler (1/2-1Gal.)	1
Respirator	1
Hard hat	1
Safety goggles	1

g. Get the Georgia Forestry Commission (GFC) fire weather forecast at 0800 hours on the internet at the following address: <http://weather.gfc.state.ga.us>. Other sites for weather information are the following: The Weather Channel at <http://www.weather.com>, and the Fort Benning Home Page at <http://www.benning.army.mil> (click on weather link at left). The weather channel has Doppler radar maps (precipitation) and satellite maps (cloud cover) which are useful in viewing the movement and direction of weather systems. If you have difficulty getting on the internet you may call the Georgia Forestry Commission at 7-568-2158 (Columbus) or 7-1-912-649-2289 (Buena Vista). It is advisable to get the fire weather forecast every day, whether burning or not, as this information can be useful in making fire suppression decisions. The GFC's PM fire weather forecast is useful in making decisions and preparations for burning on the following day, as well as, week-end burning.

h. Notify individuals, offices or agencies on the *proposed burn - call list* of your intentions to burn and your proposed burn location. *Get final clearance from Range Control* on those areas previously scheduled for burning on the Range Control maps (Scale 1:25,000). Fax the call list to Chief, EMD.

i. Ensure that the Branch Chief, Dispatcher, and Fire Management Section Supervisory Forester are aware of the burn locations. Coordinate the fire weather forecast and burn plan parameters with the Supervisory Forester.

***At the burn location:***

j. The burn boss will make the final decision on whether to burn and whether any adjustments are necessary to the burn plan.

k. Refer to aerial photographs to ensure that you are burning in the designated location. Work as a team to effectively communicate and execute the burn plan.

l. Measure and record initial field weather observations. Set a test fire to determine initial fire behavior, smoke dispersion, and plume trajectory.

m. The following procedures in **Box 3** will be followed throughout the burn, to ensure that no vehicles are lost to fire:

**Box 3. Vehicle Safety**

1. Leave ignition key in a designated location, out of sight, but familiar to other crew members.
2. Park your vehicle only within areas that are noncombustible (bare soil, pavement, burned out area).
3. Roll up windows.
4. Do not spill burning fuel in the truck bed.
5. Do not fill drip torches in truck bed.
6. Keep truck bed free of trash and litter.
7. Do not park vehicles near burning snags.
8. Do not park vehicles near ladder fuels, such as vines.
9. Extinguish torch wick prior to placing in truck.
10. Close torch breather valve.
11. Put torch in rack in bed of truck.
12. Ensure fuel cans are secured in rack in truck bed.
13. Ensure fire extinguisher is accessible and operable.

n. Inform the LMB fire dispatcher when ignition of the burn area begins.

o. Prior to burning RCW clusters, RCW technicians will burn around all RCW cavity or nest trees that have a potential to ignite and burn. Fire technicians may be called upon to assist the RCW technicians in this process. To assist in making decisions about a cavity tree's potential to ignite, look for fuel continuity around the bole that may allow the fire to ascend the tree rapidly, such as, loose bark, pitch from resin wells, and fusiform cankers. Unless otherwise directed by the burn boss, all decisions and techniques regarding burning around cavity trees will be the responsibility of each individual burn crew, whether it be RCW technicians, fire technicians, or a combination of the two. The backpack pump or bladder bag will be on hand during the burning process. When vegetation around a



cavity tree is extremely thick and high it must be removed with a fire rake to protect the tree from ignition due to radiant heat.

p. Secure the baseline and then the flanks. Use the GFC-forecasted winds and field observations to decide which side of the perimeter will become the baseline as the burn progresses. Backfire the baseline and then ignite the flanks. Due to the high temperatures in the summer season, burning should begin as soon as the dew and fog burn off and the fuel reaches an ignitable state (15% fuel moisture or <60% humidity).

q. When using drains as firebreaks between burn units a crew member must make a final inspection of the drain perimeter to ensure the fire did not cross over into another burn unit or compartment. Igniting the stand uphill from the ecotone, prior to peak fire weather, should prevent the fire from crossing the drainage. On the other hand, fire will still be used to manage those ecotones where hardwood encroachment from the ecotones is degrading RCW habitat.

r. If smoke may be a problem, extinguish wood that is generating smoke with soil and / or a backpack pump. If there is an abundance of smoldering logs / snags, extinguish ASAP after the fire passes. If smoke will not be a problem, let the wood burn. Burning snags that may fall across the burn perimeter or roads will be handled on an individual basis. If necessary, smoke-warning signs will be posted on highways and paved roads. Two signs will be posted in each direction. If smoke will be a problem at night, lights should be placed on the signs to warn motorists.

#### ***Following the burn:***

s. Complete the initial burn evaluation on the *BURN FORM* (for prescriptions, evaluations and records of fire).

t. If an RCW cluster/stand was burned, inform RCW program manager so he/she can update "COLMGT" database file.

u. Give the burn unit photocopy to the GIS Specialist so the burn unit acreage and burn area acreage may be digitized. Record the acreage on the *BURN FORM*.

#### **4. PROCEDURE TO FOLLOW WHEN BURNING IN RCW CLUSTERS:**

Both active and inactive RCW trees require protection from fire. Active cavity trees (those currently used by RCWs) are distinguished from inactive cavity trees by the presence of freshly pecked resin wells which the woodpeckers regularly tend to produce pitch (sap) which flows freely during the warmer months. This very flammable pitch may extend to the base of the tree creating a potentially volatile situation that could harm the tree. Inactive cavity trees (those not currently used by RCWs) seldom have free flowing pitch; however, many of these trees have many layers of dry pitch which will also melt and burn when exposed to the heat of a fire. The white bands used to mark the trees are susceptible to smoke and soot damage and need to be preserved. For these reasons, the following steps must be taken to protect RCW trees from igniting:

a. Prior to leaving the motor pool ensure the backpack pump is filled with water and functioning properly. Ensure 5 gallon water containers are full. Check soundness and sharpness of fire rakes. Make necessary repairs. Obtain a current list showing the status of all RCW trees in the area being burned; however, be aware that inactive RCW trees and artificial cavities may become active at any time as birds occasionally move and switch cavities. At the burn site look for the fresh rusty-red pecking on the bark to be certain.

b. At the burn site work as a team to ensure all RCW trees are properly protected throughout the burning process. Begin burning clusters when RCW technicians and the burn boss determine that the fuel and weather conditions are suitable to produce the desired habitat management objectives within the stand. Be careful to avoid fire weather conditions that could allow the fire to spread too fast making protection of the RCW trees too difficult or unsafe. RCW technicians on site are responsible for determining the degree of protection needed for each RCW tree. The time for ignition within an RCW cluster may occur any time from 0930 to 1300 hours depending on the season of year, type of fuel, fuel load, wind speed and humidity. Burning late in the day should be avoided when low humidities and high winds are forecasted because the fire weather will be more unstable causing more intense fire

behavior and possible crown scorch. In addition, local winds (speed and direction) become unpredictable due to solar radiation and downdrafts from approaching thunderstorms.

c. At the burn site, take a properly functioning backpack pump, fire rake, drip torch, ignition source, and current RCW tree list to each RCW tree being protected. When deciding which tree to begin with, take into consideration the procedures described in sections “c” and sections “h” through “l” below. In most cases, ignition should begin on the downwind side of the RCW tree that is on the downwind side of the cluster. Before ignition, scrape the loose bark and pitch off of the lower 2 feet of the tree with your boot. Clear accumulated bark and pitch away from the base of the tree approximately 1 to 2 feet, depending on amount of accumulation. Clear all material away from tree scars or cankers. Using the rake, cut down all volatile plants (such as gallberry, wax myrtle, blueberry, and thick bunch grasses) and remove dead branches within 8 feet of the RCW tree, depending on activity of tree and amount of fuel load. Next, using the backpack pump, spray the entire bole of the tree from the top white band down. Avoid wetting the fuels at the base of the tree because this fuel must be burned or removed to make the tree secure before moving to the next RCW tree.

d. If the conditions at an RCW tree require additional precautions to protect the tree, a small area approximately 3 feet in width about 15 to 20 feet from the tree should be raked clear of vegetation. Loosen the soil in this 3 foot band and form a pile. Soil from this pile may be thrown on the fire in the event the backpack pump malfunctions or runs out of water. This pile of soil will serve as an emergency backup for the backpack pump. After the tree has been secured with a 15 to 20 foot black line (an area in which all fuel has been consumed by fire), spread the piled soil and previously raked vegetation back over this bare area.

e. Normally, raking around RCW trees should be avoided to minimize soil and fine root damage and the spread of undesirable plants; however, under more extreme conditions, all of the fuel and vegetation must be raked or removed a distance of 10 to 12 feet from the base of an RCW tree to ensure its protection. Scatter the piled fuel with the fire rake to reduce radiant heat.

f. Once these steps have been followed, the RCW tree is prepared for the burning phase. Ignite a small spot fire on the downwind side of the tree. This will allow the fire to back around the tree. A backing fire will emit less heat and move slowly allowing time to react in the event of a contingency, such as a sudden wind shift or a flare up. Only if conditions permit, this process can be speeded up by igniting a line 2-3 feet long perpendicular to the wind direction at the base of the downwind side of the tree. After this line has burned 1-2 feet away from the tree downwind, a second line of fire can be laid downwind and parallel to the first line. These fires will burn together quickly. Subsequent fires can be started in a similar fashion downwind and flanking the RCW tree if conditions permit safe execution of this type of lighting. As always, consult knowledgeable RCW personnel or the burn boss before deviation from the more cautious procedure. Never allow fire to approach the upwind side of the tree from another fire until sufficient blackline has developed to ensure protection of the RCW tree. Always wear the backpack pump properly when burning around RCW trees with volatile conditions since one left on the ground makes quick response more difficult.

g. Monitor the active cavity tree until the fire has burned the fuel around the tree. Be alert for sudden flare-ups in nearby volatile vegetation. Flare-ups generate radiant heat which can ignite the pitch on a tree. Sudden flare-ups can be suppressed with water or soil. Be alert and watch for the ignition of pitch on the bole of the tree, which can rapidly burn up to and beyond the cavity if not extinguished in time. Extinguish these pitch fires immediately. Make sure that the fire burning away from the tree is never too hot to prevent you from approaching the tree and controlling a pitch fire. This can be done by occasionally spraying water on the flames. The idea is to make the fire manageable and the tree approachable without extinguishing the fire.

h. In the event two or more RCW trees are located in close proximity (within 75 feet) it will be necessary to prepare all of these trees as described in “c”, “d”, and/or “e”. Also, conditions may warrant that a 3 foot wide by 10 foot long break in the fuels be raked between each of these adjacent trees to slow the spread of fire from one tree to another. Piled fuels should be scattered prior to ignition. RCW trees located in close proximity to each other should be handled by four or more people working together in crews of two (one crew per tree).

i. In clusters located on steep slopes (“F” and “G” training areas), as well as on some moderate slopes, ignition

should start at the RCW tree located at the top of the slope. After proper preparation, ignite the fuel on the uphill side of the tree. Allow the fire to back around the tree. Under most conditions, fire will burn more intensely up a steep slope than with the direction of the wind. Never start ignition at the bottom of the slope as this will create a head fire which will burn upslope with a high rate of spread making it impossible to secure the RCW trees. Monitor each tree until the fire has burned the fuel around it developing a good protective blackline.

j. During the RCW spring nesting season, extreme caution and special care must be given to nest trees. Protection of these trees require the highest priority within the cluster. All reasonable precautions described above should be followed. If a nest tree has not been discovered, look for evidence of nesting activity such as an RCW flushing from a cavity or one or more RCWs vocalizing and staying close to an active cavity tree. Any cavity tree surrounded by such activity should be treated as a nest tree.

k. When prioritizing the protection of RCW trees, those of most importance are active cavities, followed by active starts, inactive cavities, enlarged inactive cavities, and inactive starts--in that order.

l. RCW management personnel, with the assistance of forestry personnel, should burn the clusters within the burn unit. Forestry personnel, with the assistance of RCW personnel should burn the stands around the clusters once they are secured. RCW management personnel are most familiar with the level of activity of the RCW trees, as well as, their locations within the clusters. Forestry personnel, on the other hand, often do not know the exact location of each RCW tree because they are not involved in the RCW monitoring process. For this reason, forestry personnel may inadvertently miss RCW trees which are obscured from view or are separate from the main cluster. This would put these trees in jeopardy during the burning process. The only exception to this procedure of burning clusters is when RCW technicians are unavailable and forestry personnel have the following proper documentation: current RCW tree listing and a GIS map showing the GPS location of all cavity trees. Only if this information is available will forestry personnel conduct burning in inactive clusters, inactive recruitment clusters, or designated recruitment sites, following the procedures detailed in steps "a" through "k". Forestry personnel will not prescribed burn active RCW clusters without the oversight of RCW technicians. In the case of an emergency jeopardizing a cluster, such as, a wildfire or uncontrolled prescribed burn (spot over or fire crosses hardwood drain) forestry personnel will coordinate and work with RCW technicians in handling the situation (rapid response concept). This method of burning RCW clusters should protect the RCW trees and eliminate the potential of an RCW tree becoming severely damaged by fire.

m. If a cavity tree is very active and there is uncertainty or apprehension about what to do, communicate with an experienced prescribed burner for guidance. Ability and experience in handling these situations varies from one individual to the other. Do not take chances. Remember fire is indiscriminate and unpredictable. **Work safely at all times.**

**SMOKE HAZARDS--During prescribed burning and fire suppression activities you will be exposed to carbon monoxide and particulate matter. For this reason it is important to avoid inhaling the smoke. Try to stay upwind from the smoke during prescribed burning. This will not always be possible when burning around RCW cavity trees, mopping up snags or stumps, or suppressing fires. Therefore, when you are burning or firefighting under conditions which make smoke unavoidable wear the respirator you have been issued.**

## **5. CONSULTATION WITH U.S. FISH AND WILDLIFE SERVICE:**

In the event an RCW cavity tree is damaged by fire, or, is in jeopardy of delayed mortality due to extensive crown scorch the Fish and Wildlife Service Ecological Services Office will be notified of the circumstances that resulted in the damage. In the event a cavity tree is lost to fire, mitigation measures may include the installation of an artificial cavity to augment the cluster. The consultation process will be followed for any prescribed burning which may jeopardize the existence of endangered, threatened, and species proposed for listing in compliance with Section 7. "Interagency Cooperation" of the Endangered Species Act. In addition, an annual summary of prescribed burning will be provided the Ecological Services Office. This summary will include an update on the 3 year burn rotation as recommended in the JBO.

## **6. PRESCRIBED BURNING IN CANTONMENT AREAS:**

The cantonment areas of Fort Benning present a unique opportunity for the expansion of the RCW population. Prescribed burning of these areas is perhaps the most significant activity natural resources management activity that can assist in making the habitat suitable for RCW recruitment. As time and fire weather permit, pine and pine / hardwood stands in the cantonment area initially will be prescribed burned during the dormant season to reduce the fuel and minimize delayed mortality. After this initial dormant season burn prescribed fire will be applied in the growing season to control hardwoods. The goal will be a 2-3 year burn rotation until hardwoods are under control similar to the training areas. This will not only restore the habitat for RCWs but also will reduce the fuel loads at the urban / wildland interface and prevent a catastrophic fire. An ambitious effort is already under way to burn cantonment areas in Sand Hill and Harmony Church. Currently, efforts are being concentrated in those areas where RCW clusters already exist.

### **ATTACHMENT B6.3 - PRESCRIBED BURN DOCUMENTATION**

- a. Burn Plan Form
- b. Telephone Contact List
- c. GFC Fire Weather Forecast
- d. Field Weather Observations

**Attachment B6.3a. Burn Plan Form**

Area \_\_\_\_\_ Dates \_\_\_\_\_ Prescribed Fire \_\_\_\_\_ Wildfire \_\_\_\_\_ Photo # \_\_\_\_\_  
Burn Unit Acres \_\_\_\_\_ Burn Area Acres \_\_\_\_\_  
Coordination ---- Date / Initials ----- RCW > \_\_\_\_\_ T&E > \_\_\_\_\_  
Game > \_\_\_\_\_ Timber > \_\_\_\_\_

**BURN FORM: FOR PRESCRIPTIONS, EVALUATIONS, AND RECORDS OF FIRE**

Location ( RCW Clusters, Roads, Creeks, Training Sites ) \_\_\_\_\_  
Ignition Time \_\_\_\_\_ Burn Out Time \_\_\_\_\_ Previous Burn Date \_\_\_\_\_  
Burn Boss(BB)/Burn Crew \_\_\_\_\_ Objective \_\_\_\_\_  
Photo. Documentation ? Yes \_\_\_\_\_ No \_\_\_\_\_ Dates : Before \_\_\_\_\_ After \_\_\_\_\_  
Firebreaks Plowed ? Yes \_\_\_\_\_ No \_\_\_\_\_ If Yes, Put Location (Red Dash Line) on Photo  
Man-Made Assets ( Show in Red on Photo Copy ) ? Yes \_\_\_\_\_ No \_\_\_\_\_  
Description \_\_\_\_\_  
Dates Secured \_\_\_\_\_  
Past Problems \_\_\_\_\_  
\_\_\_\_\_

**STAND CONDITION :**

Overstory (Forest Type=LY, LF, SF, Mixed Pine; DBH=0-2", 2-6", 6-10", 10+"; BA=< 50, >50): \_\_\_\_\_  
\_\_\_\_\_  
Understory (Woody Vegetation, Species, Avg. Height) \_\_\_\_\_  
Fuels \_\_\_\_\_ Topography (% Slope, Drains, Gullies,Etc.) \_\_\_\_\_  
\_\_\_\_\_

<b>FIRE WEATHER:</b>	<u>Preferred</u>	<u>Forecast / Actual</u>
SFC Wind / Direction	<u>6-15 MPH/</u>	_____
Air Temperature	_____	_____
(40-70 Winter, 60-85 Spring, 75-95 Summer)		
Relative Humidity	<u>25-60%</u>	_____
Fuel Moisture	<u>1 HR.= 7-15%</u>	_____
Days Since Rain	<u>1 - 10 DAYS</u>	_____
Transport Wind	<u>&gt; Than 9 MPH</u>	_____
Mixing Height	<u>&gt; Than 1650 FT</u>	_____

Smoke Dispersion Index ( SDI ) \_\_\_\_\_ Drought Index \_\_\_\_\_

## **EVALUATIONS**

### **FIRST EVALUATION (ASAP):**

Date \_\_\_\_\_

Date for Second Evaluation \_\_\_\_\_

- 1.) Time Perimeter Patrolled? During Burn \_\_\_\_\_ Post Burn \_\_\_\_\_ Final (Next A.M.) \_\_\_\_\_  
Signs Retrieved? Yes \_\_\_\_\_ No \_\_\_\_\_
- 2.) Mop Up Action Needed? Yes \_\_\_\_\_ No \_\_\_\_\_ Action Taken \_\_\_\_\_
- 3.) Time Perimeter Secured (Post Burn Patrol) \_\_\_\_\_
- 4.) % Crown Scorch \_\_\_\_\_  
Bark Char Height \_\_\_\_\_  
% Hardwood Topkill \_\_\_\_\_
- 5.) Smoke Problems ? Yes \_\_\_\_\_ No \_\_\_\_\_ Location \_\_\_\_\_  
If Yes, Action Taken \_\_\_\_\_
- 6.) Spotting ? Yes \_\_\_\_\_ No \_\_\_\_\_ Location \_\_\_\_\_  
If Yes, Action Taken \_\_\_\_\_
- 7.) Fire Behavior ( ROS, Torching Out, Controlled, Intense, Subdued, Etc.)  
Test Fire \_\_\_\_\_  
Actual Burn \_\_\_\_\_
- 8.) Was Objective Met ? Yes \_\_\_\_\_ No \_\_\_\_\_ Why Not? \_\_\_\_\_
- 9.) Erosion or Mineral Soil Exposed ? Yes \_\_\_\_\_ No \_\_\_\_\_ ( Show on Photo Copy ) Location ( GC ) \_\_\_\_\_
- 10.) Remarks; Problems, Adverse Actions: \_\_\_\_\_  
\_\_\_\_\_

### **SECOND EVALUATION:**

Date \_\_\_\_\_

- 1.) Tree Mortality ? Yes \_\_\_\_\_ No \_\_\_\_\_ Location ( GC ) \_\_\_\_\_ Area Size \_\_\_\_\_ Location ( GC ) \_\_\_\_\_  
Area Size \_\_\_\_\_ Location ( GC ) \_\_\_\_\_ Area Size \_\_\_\_\_ % Area Affected \_\_\_\_\_
- 2.) Insect and Disease Damage ? Yes \_\_\_\_\_ No \_\_\_\_\_ Location ( GC ) \_\_\_\_\_ Area Size \_\_\_\_\_  
Location ( GC ) \_\_\_\_\_ Area Size \_\_\_\_\_ % Area Affected \_\_\_\_\_
- 3.) % Understory Kill : 0 - 25 % \_\_\_\_\_ 26 - 50 % \_\_\_\_\_ 51 - 75 % \_\_\_\_\_ 76 - 100 % \_\_\_\_\_
- 4.) Sprouting Vigor of Undesired Vegetation : # of Sprouts/Stump: 1 - 4 \_\_\_\_\_ 5 - 8 \_\_\_\_\_ > 8 \_\_\_\_\_
- 5.) Erosion or Mineral Soil Exposed ? ( Show on Photo Copy ) Yes \_\_\_\_\_ No \_\_\_\_\_ Location ( GC ) \_\_\_\_\_
- 6.) Were Objectives Met ? Yes \_\_\_\_\_ No \_\_\_\_\_ Why Not? \_\_\_\_\_
- 7.) Remarks and Recommendations : \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# Attachment B6.3b. Telephone Contact List

## COORDINATION LIST - PRESCRIBED BURNING

DATE \_\_\_\_\_ OZONE FORECAST: \_\_\_\_\_

COMPARTMENT \_\_\_\_\_ DOVE FIELD \_\_\_\_\_ SITE PREP \_\_\_\_\_ UNDERSTORY \_\_\_\_\_

BURN CREW \_\_\_\_\_

RANGE CONTROL CONCURRENCE: YES \_\_\_\_\_ NO \_\_\_\_\_

BURN AC. TRNG. AREA \_\_\_\_\_ TOTAL YTD \_\_\_\_\_ GOAL 24,272 % OF GOAL \_\_\_\_\_

BURN AC. CANT. AREA \_\_\_\_\_ TOTAL YTD \_\_\_\_\_ GOAL 1,488 % OF GOAL \_\_\_\_\_

BURN AC. PART OF GOAL: YES \_\_\_\_\_ NO \_\_\_\_\_

	TIME	PERSON
	<u>NOTIFIED</u>	<u>CALLED</u>
DISPATCHER, NRMB (PUT LIST ON DESK)	_____	_____
CHIEF, NRMB (PUT LIST ON DESK)	_____	_____
CHIEF, ENVIRON. MGMT. DIV. (FAX LIST)	_____	_____
RANGE CONTROL 545-3474	_____	_____
PUBLIC AFFAIRS OFFICE 545-3512/2211	_____	_____
FIRE CONTROL 544-2117	_____	_____
GA.FORESTRY COMM. (COLUMBUS) 7-568-2158	_____	_____
GA.FORESTRY COMM. (TOWER) 7-989-3662	_____	_____
MILITARY POLICE 545-5222	_____	_____
MARION CO. SHERIFF 7-1-(912) 649-3841	_____	_____
COLUMBUS FIRE DEPARTMENT 7-322-5454	_____	_____
AL.FOREST. (LOCAL) 7-855-3302	_____	_____
AL.FOREST. DISTRICT 7-1-(334) 261-5585	_____	_____
WEST CENTRAL GA. HOSPITAL 7-568-5226	_____	_____
GEORGIA DOT 7-989-3940	_____	_____
ASP FACILITY 544-6015 or 544-7490	_____	_____
UCHEE CREEK REC. AREA 545-7238	_____	_____
LAWSON FIELD OPERATIONS 545-7001	_____	_____
INF TRNG BDE(S-3) SAND HILL 544-0089	_____	_____
BASIC CBT TRNG BDE(S-3) SAND HILL 544-8578	_____	_____
TSB-11TH INF REG (MAIN POST) 545-5499	_____	_____
RTB(Q1-3, CAMP DARBY, TODD FLD) 544-6602/6441	_____	_____
3 BDE/3 INF DIV(KELLEY HILL) 544-4111	_____	_____

\_\_\_\_\_ 1/29 INF REG (HARMONY CH) 544-6814/6020<sup>1</sup>  
 \_\_\_\_\_ LAND NAVIGATION COMMITTEE (2/29) 545-7654<sup>1</sup> \_\_\_\_\_  
 \_\_\_\_\_ SANTA FE CHILD CTR (MS. ELLIOT) 544-2339 \_\_\_\_\_  
 (Contact when burning in A-5, A-6, BB-6, Bouton Heights, Davis Hill)  
 \_\_\_\_\_ WASHINGTON HGTS (MS. PERRY) 683-9856<sup>2</sup> \_\_\_\_\_  
 ADDRESS: 4627 CONNER ROAD  
 \_\_\_\_\_ WASHINGTON HGTS (MS. WILLIAMS) 689-7210 (HOME)<sup>2</sup> \_\_\_\_\_  
 DCA-544-9363 (WORK) \_\_\_\_\_  
 \_\_\_\_\_ GARRISON COMMANDER'S OFFICE 545-1500 \_\_\_\_\_  
 (Contact GC when burning in following areas: Main Post CA, Sand Hill CA,  
 K-5, K-6, M-7, N-1, N-2, O-5, O-6, O-7, U-1, U-2, and U-3)

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<sup>1</sup>Contact when burning in AO Gold (M-8), AO Yellow (M-7), AO Green (M-8), Brittin Range (O-14), Fuhrman or Yankee Road Land Navigation Sites (Q-1 to Q-7), Lee Field, U-1, U-4, and M-8

<sup>2</sup> Contact when burning in Sand Hill CA adjacent to boundary (SHC #9, 18, and 19)



Attachment B6.3c. GFC Fire Weather Forecast

## Georgia Forestry Commission

### Fire Weather Data

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District Weather Forecast for: Americus

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FORESTRY WEATHER & SMOKE MANAGEMENT FORECAST FOR GEORGIA  
G.F.C. Meteorological Office Macon, Georgia  
ISSUED AT: 715 AM EDT Wed 14 Jun 2000

Ver. 1.02.0 Beta - Windows NT 4.0 MSAT-2000 DCS - G4

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#### LEGEND

##### CLOUDS.....

1. F = Fair / Cl = Clear
2. MF = Mostly Fair
3. PC = Partly Cloudy
4. MC = Mostly Cloudy
5. CY = Cloudy
6. VC = Variable Cloudiness

##### PRECIP TYPES.....

1. R = Rain
2. S = Snow  
SF = Snow Flurries
3. RS = Rain or snow
4. SH = Showers
5. TS = Thundershowers

##### ATMOSPHERIC TENDENCY TO PROMOTE FIRE BEHAVIOR ADJECTIVES

1. Er = Erratic
2. In = Intense
3. No = Normal
4. Su = Subdued

##### SMOKE DISPERSION ADJECTIVES

1. Greater than 100 = Very Good
2. 61 to 100 = Good
3. 41 to 40 = Generally Good
4. 21 to 40 = Fair
5. 13 to 20 = Poor
6. 7 to 12 = Generally Poor
7. 1 to 6 = Very Poor

CAUTION: Smoke Dispersion Values above 100 are usually indication  
of other problems such as strong winds. Exercise caution

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REMEMBER - Favorable dispersion conditions should NOT be used alone  
in deciding to initiate a prescribed burn.

D I S C U S S I O N \*\*\*\* /NONE/

\*GA\* DISTRICTS 4-South and 7

	TODAY	TONIGHT	THURSDAY
SKY CONDITION.....	Partly Sunny	Partly Cloudy	Mostly Cloudy
TEMPERATURES.....	92 TO 96	69 TO 73	87 TO 91
HUMIDITY/TEMP INDEX..			92 to 95
RELATIVE HUMIDITY....	35 TO 40	86 TO 92	46 TO 52
PROBABILITY OF PRECIP	20	20	40
SHOWER COVERAGE.....		Isolated	Widly Sctd
PRECIPITATION TYPE...	MAINLY EVEN'G	MAINLY EVEN'G	MAINLY EVEN'G
	TSHWRS	TSHWRS	TSHWRS
PRECIPITATION AMOUNTS	1/4 TO 1/2 INCH	1/4 TO 1/2 INCH	1/4 TO 1/2 INCH
PRECIP. DURATION.....	Around 1 Hour	Around 1 Hour	1 To 3 Hours
SFC WINDS (OPEN).....	SW 6-10 MPH	VARBL 5-8 MPH	SW 8-12 MPH
CANOPY WINDS.....	VARBL 3-5 MPH	VARBL 4 MPH	SW 4-6 MPH
SMOKE DISPERSION ....	79 (Good)	4 (Vry Poor)	30 (Fair)
FOG POTENTIAL.....	None	SLIGHT	None
LOW VISIBILITY INDX...	1	6	2
MIXING HEIGHT (Meters)	2475	256	762
(In Feet)	8142	842	2506
TRANS WIND SPD (Met/S)	5	4	6
(In MPH)	11	9	14
TURNER & Atm Tendency	2 (INTENSE)	6 (Normal)	4 (Normal)
PLUME TRAJECTORY.....	NORTHEAST	NORTH	NORTHEAST
DRYING POTENTIAL.....	Very High	Low	High
AVAILABLE SUNSHINE...	Around 10 Hrs		Around 6 Hrs

#### FORECAST FOR THURSDAY NIGHT

Sky Cover... Partly Cloudy	Winds..... VARBL 5-8 MPH
Temps..... 69 TO 73	Humidity.... 95 TO 100
Chc Precip.. 30	Pcp Type.... MAINLY EVEN'G TSHWRS
Precip Amt.. 1/4 TO 1/2 INCH	Precip Dur.. 1 TO 2 Hours
Smoke Disp.. 4 (Vry Poor)	Turner & ... 6 (Normal)
	Atm Tendency
Mix Height..	Tran.Wnd Spd
(Meters).. 85	(Met/Sec).. 4
(Feet).... 279	(MPH)..... 9

#### Projected 5-7 Day Outlook for Georgia

REMINDER: This projection is run from different computer models and differences between it and the regular forecast are likely.  
Smoke screening information should be used for planing only.

#### Projected 5-7 Day Outlook

District 7

0700 LST 14 Jun 2000

NT Version 1.5.0

THU 15..FRI 16..SAT 17..SUN 18..MON 19..TUE 20..WED 21

Sky Condition..	MC	MC	MC	CY	MC	MC	VC	MC	VC	VC	PC	VC	PC	VC
Min/Max Tmp....	70	86	70	84	73	85	73	90	71	89	69	89	69	90

DewPoints.....	68	68	68	68	71	71	71	71	69	69	67	67	67	67
Max/Min RH.....	93	54	93	58	93	62	93	53	93	51	93	47	93	46
Precip Chc.....	20	60	40	60	40	50	30	40	30	30	20	30	20	30
Precip Type....	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS
Transport Winds														
In Met/Sec..	3	6	3	7	3	6	3	6	2	6	2	6	2	6
In MPH.....	5	11	5	13	5	11	5	11	3	11	3	11	3	11
Turner Stabil..	6	3	6	3	6	3	6	3	6	3	7	3	7	3
Atmosp Tendency	No	No	No	No	No	No	No	No	No	No	Su	No	Su	No
Smoke Disper..	2	34	2	38	2	31	2	39	1	40	1	42	1	43
Low Vsb Risk Idx	7	1	7	1	7	1	7	1	8	1	8	1	8	1
Mixing Hgt (Meters)														
Night		135		108		108		108		108		135		135
Daytime		853		759		759		1030		1084		1192		1246
Sfc Winds Spds.														
Daytime..		8-12		8-12		8-12		6-12		6-12		6-12		6-12
Night....		3-7		3-7		3-7		3-7		3-7		3-7		3-7

Current Weather for 615 EST

14 Jun 2000

CURRENT WEATHER LEGEND

RA- (light rain)	RA (moderate rain)	RA+ (heavy rain)
SH- (light showers)	SH (moderate showers)	SH+ (heavy showers)
TS-(light thunder shwrs)	TS(Moderate thunder shwrs)	TW+(heavy thunder shwrs)
DZ (drizzle)	FR (freezing rain)	FD (freezing drizzle)
SW (snow showers)	SN- (light snow)	SN (moderate snow)
		SN+ (heavy snow)

STATION NAME----- SKY COVER-----VISIB----WX---TMP---RH---WINDS

Columbus-Gentian GA	Clear	10.00		71	84	Calm
Columbus-Lawson, GA	Scattered Clouds	7.00		66	89	SE 1
Albany, GA.....	Clear	10.00		70	93	Calm

Maximum and Minimum Temperatures and

Precipitation Last 24 Hours

0600 EST 14 Jun

Station	High	Low	Max RH	Min RH	24 Hr Precip
Columbus-Gentian GA	93	73	87	37	0.00
Columbus-Lawson, GA	95	66	93	34	0.00
Albany, GA.....	93	70	100	36	0.00

### Attachment B6.3d. Field Weather Observation

[illegible]

